GEOGRAPHY OF MICHIGAN & THE GREAT LAKES REGION

GEO 333

Spring Semester, 2017

Instructor: Dr. **Randall Schaetzl**
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Course Goals: This course is intended for those students who want an overview of the basic geography of Michigan. Emphasis will be on the *physical* resources of the state, and how *humans have utilized* those resources. Geographic patterns - their occurrence, relevance, and influence on human society - will be stressed, and in order to better comprehend and follow the lectures, knowledge of geographic patterns and basic place names in Michigan is expected. The course has no prerequisites.

Text (required): Schaetzl, R.J., Darden, J.T. and D. Brandt. (editors) 2009. Michigan Geography and Geology. Pearson Custom Publishing, Boston, MA.

Other Resource Materials: I strongly urge everyone in this class to download and print out the FREE course handouts and note pages that are posted on D2L. The Powerpoint documents contain maps and graphics that I use in lecture – and you can portray them in Powerpoint as 2, 3 or 6 images to a page, whichever you prefer. Print them out (color is best), hole-punch them, place them in a 3-ring binder, and bring them to class. Or keep them on your computer and take notes directly on them in class. These materials will serve as an invaluable help for note-taking. Each student is also expected to examine, read and study the web page designed for this course on a frequent basis.
Web page (bookmark it!): **http://geo.msu.edu/extra/geogmich/** Material for a given lecture may not all be on one page, but may be "scattered" throughout a few different sections of the web page.

Exam questions may come directly from these two sources (book and web page), even if the specific topics have not been explicitly covered in lecture.

Lectures: M, W, 3:00 - 4:20, Room 206 Old Horticulture Building. Because so much of the material in this class is NOT available in a textbook or even on the web page, attendance and good note-taking at lecture is *essential*.

Exams and Quizzes: There will be two quizzes, two mid-semester exams, and a final exam in GEO 333. *The final exam is cumulative.* There are also "end-of-lecture" questions, worth 2 points each (see below). Point totals, and dates of the various quizzes and exams, are listed below.

Quiz 1:	40 points
Quiz 2:	60 points
First exam:	80 pts
Second exam:	90 points
Final exam (cumulative):	110 points
End-of-lecture questions:	20 points
Extra credit (see below):	(some is available)
TOTAL:	**400 points**

Grading: Based on your total points, your percentage will be calculated (out of 400 possible) and rounded to the nearest tenth of a percentile. Based on that number, a final course grade will be assigned, using the grade scale shown below.

87% or greater = 4.0
83% - 86.9% = 3.5
75% - 82.9% = 3.0
71% - 74.9% = 2.5
62% - 70.9% = 2.0
58% - 61.9% = 1.5
50% - 57.9% = 1.0
less than 200 points (50%) is **not** passing. **No exceptions**.

<u>End-of-Lecture questions</u>
Class attendance continues to be a problem of increasing importance at MSU, and GEO 333 is no exception. My way of addressing this is as follows. Randomly, <u>at the end of 12 lectures</u> during the course of the semester, I will end the class 2-3 minutes early every day and post a 2-point question on the screen. I call these "end of lecture" (EOL) questions. The question will come from that day's lecture, and the answer to it will be *easy*, if you are there and were paying attention. You MAY use your notes or the D2L materials to answer the question, but you may not discuss the answer with anyone or look at anyone else's notes – no cheating. Each student will write their name, student number, and the answer to the question on a small piece of paper, and hand it to the TA. You'll be emailed the EOL question results the next day. This is my way of promoting attendance and, in turn, raising everyone's grade. Each student will be allowed to drop their lowest EOL two scores, as a way of not penalizing someone who legitimately had to be absent. *There are no "make-ups" to EOL questions.*

<u>Exams and quizzes</u>
Students will not be allowed to turn in their exams or take a quiz without first presenting a valid MSU ID or another form of identification with a photo on it. There will be no exceptions to this policy!

Exams will contain some T/F and multiple choice questions. Each exam will also have 2-5 short answer/short essay type questions, 20-25 "visual" questions, some questions will involve maps (of course - this is a geography class!). The first exam will cover material discussed since the beginning of the course. The second exam will cover only material discussed since the first exam. The final exam is comprehensive but stresses material covered since the second exam. Material from both the lecture and (to a lesser extent) the book and web page will be covered on exams. The essay and map portions of the exams will be returned to the students, as well as the computer-derived answer sheet, which details the student's responses to the objective questions and

provides a list of the correct responses. Keys to all exams are available in the TA's and professor's offices, and students may look over any and all of their exams during office hours. *If you miss the first or second exam*, you will normally be assigned, for the missed exam, the average grade from your other two exams - but ONLY provided that you have a valid excuse. Make-up exams are rarely given, and are generally only allowed in cases where a doctor's excuse is presented or if the student discusses their particular dilemma with the professor well *before* the exam date. If an exam is missed due to a family funeral, a newspaper obituary (with the date of the newspaper issue clearly shown) must be presented to the instructor within five class days of the missed exam or the student will receive a grade of zero for the exam.

Two quizzes will be given during the course of the semester, each during the last 20 minutes of class. Quiz #1 will be involve naming **all** the counties of Michigan on a county outline map. Quiz #2 will be similar to the first, except that identification will involve major cities, rivers, lakes, bays, islands and landforms. For each quiz, the number of correct answers will be determined and then that score will be adjusted, to arrive at a final grade out of 40 (1st quiz) or 60 (2nd quiz). There are no secrets as to what is on the quizzes. Here's what you can expect:

QUIZ 1: You will be given a blank county outline map of Michigan and will be expected to fill in the name of each of Michigan's 83 counties (names are not provided, spelling must be "very close" to be judged correct).
QUIZ 2: You will be given several blank maps of Michigan, and will be expected to fill in or identify physical and cultural features on the map.

RIVERS: Presque Isle, Ontonogan, Sturgeon (there are TWO of them, both in the UP; you need only find one), Michigamme, Menominee, Escanaba, Tahquamenon, Manistique, St. Joseph, Kalamazoo, Grand, Muskegon, Manistee, St. Marys, St. Clair, Detroit, Pere Marquette, Thunder Bay, Au Sable, Rifle, Tittabawassee, Shiawassee, Flint, Cass, Saginaw, Huron, Raisin, Black (the one in Sanilac County). The rivers are drawn on the map and the names are given; the student must match the correct number to the correct river.

LAKES (largest to smallest): St. Clair, Houghton, Torch, Burt, Charlevoix, Mullett, Gogebic, Portage, Crystal, Manistique, Black, Higgins, Hubbard, Indian. Locations are indicated on the maps but names are NOT given (spelling must be "close").

CITIES: Detroit, Grand Rapids, Lansing, Flint, Ann Arbor, Warren, Alpena, Traverse City, Houghton, Marquette, Munising, Battle Creek, Kalamazoo, Benton Harbor, St. Joseph, Muskegon, Ludington, Charlevoix, Gaylord, Bay City, Monroe, Midland, Saginaw, Port Huron, Sault Ste. Marie, Manistique, Escanaba, Ironwood, Iron Mountain, Jackson, Niles, Adrian, Cadillac, Mt. Pleasant, Menominee, Dearborn, Petoskey, Manistee. Cities are represented on the map as labeled dots, you must provide the name for each city/dot.

BAYS: Keweenaw Bay, Big Bay de Noc, Grand Traverse Bay, Whitefish Bay, Huron Bay, Thunder Bay, Saginaw Bay, Little Traverse Bay. Locations are indicated on the maps but names are NOT given (spelling must be "close").

LANDFORMS: Huron Mountains, Garden Peninsula, Whitefish Point, St. Clair Delta, Seney Swamp, Keweenaw Range/Copper Country, Chippewa County Clay Plains, Sleeping Bear Dunes, SE Michigan Interlobate moraine, Grayling Fingers, Porcupine Mountains, Antrim-Charlevoix drumlin field, Menominee drumlin field, Leelanau peninsula. The landforms are drawn on the map and the names are given; the student must match the correct number to the correct landform.

ISLANDS: Less Cheneaux Islands, Beaver Island, North and South Manitou Islands, Mackinac Island, Bois Blanc Island, Isle Royale, Sugar Island, Neebish Island, Drummond Island. Locations are indicated on the maps but names are NOT given (spelling must be "close").

Extra Credit: It is possible to earn extra credit in GEO 333 by going the extra mile and helping make this course better for future students. To do this, you must provide Dr. Schaetzl with newspaper or magazine articles, images, rocks, items of historical interest, or other information that can be used to bolster the class or the web page in the future. For this type of contribution students may earn up to **5 EC points for each item**. Extra credit points are limited to 20 per person, total. I am also open to other ideas for extra credit, within reason.
ALL EXTRA CREDIT IS DUE NO LATER THAN THE DATE OF THE LAST LECTURE.

Phone and laptop policy: Out of *respect* for me and for your classmates, the use of phones (yes, that means *texting*, too) is absolutely not allowed in class. If you must use your phone, please leave the room quietly to do so. You may use your computer to take notes or to view the class notes on D2L.

The first time you are caught using your phone in class, you will be asked to put it away. The second time, you will be asked to leave. The same policy applies to recreational use of laptops during class.

RELATED COURSES

GEO 208: Physical Geography of National Parks
GEO 330: Geography of the United States and Canada
GEO 410: Geography of the Plants of North America
GEO 407: Regional Geomorphology of the United States
GEO 408: Soil Geomorphology Field Study
GEO 453: Metropolitan Environments
ANP 491: Great Lakes Archaeology
ANP 438: Great Lakes Indians
GLG 302: Geology of Michigan
FOR 101: Michigan's Forests
FW 207: Great Lakes Biology and Management
FW 284: Natural History and Conservation in Michigan
HST 320: History of Michigan
PLB 218: Plants of Michigan
PRR 100: Recreation in Michigan Natural Resources
RD 440: Resource Development Public Policy Process in Michigan
ZOL 361: Michigan Birds

(Please let me know if you have any additional suggestions for this list)

LECTURE AND READINGS OUTLINE

Date	Lecture topics	web page URLs for and book chapters - assigned readings
Jan 10	Introductory comments, course structure, goals and grading; the GEO 333 web page	geo.msu.edu/extra/geogmich/ geo.msu.edu/extra/geogmich/part-one.html **BOOK chapter 1**
Jan 12	**PART I: The geologic basement** Geologic concepts; geologic time; the Precambrian Era in Michigan; discovery and geography of Michigan's iron ranges	geo.msu.edu/extra/geogmich/part-two-A.html Look at the iron mining parts of this page: geo.msu.edu/extra/geogmich/part-five-G.html **BOOK chapters 2 and 3**
Jan 17	Geology of iron ore; history and development of iron mining	Look at the iron mining parts of this page: geo.msu.edu/extra/geogmich/part-five-G.html geo.msu.edu/extra/geogmich/Marquette-iron-range.html **BOOK chapter 11**
Jan 19	The geography of iron and steel; the Soo Locks; shipping on the Great Lakes	geo.msu.edu/extra/geogmich/part-five-E.html Also see the iron and steel parts of this page: geo.msu.edu/extra/geogmich/part-five-B.html **BOOK chapter 30**
Jan 24	Moving iron ore to the steel mills; steelmaking: the end point of iron; **QUIZ 1**	geo.msu.edu/extra/geogmich/iron_ore__taconite.html Examine the iron and steel parts of this page: geo.msu.edu/extra/geogmich/part-five-B.html
Jan 26	Geology of the Copper Range and Isle Royale; History and development of copper mining	the copper parts of this page: geo.msu.edu/extra/geogmich/part-five-G.html Precambrian parts of this page: geo.msu.edu/extra/geogmich/part-two-A.html geo.msu.edu/extra/geogmich/copperrange.html **BOOK chapter 12**
Jan 31	Sandstones of the UP; waterfalls, cuestas and the Michigan Paleozoic basin	most everything after "Paleozoic Era" on this page: geo.msu.edu/extra/geogmich/part-two-A.html geo.msu.edu/extra/geogmich/niagara.html geo.msu.edu/extra/geogmich/picturerock.html geo.msu.edu/extra/geogmich/waterfalls.html **BOOK chapter 4**
Feb 2	Early Paleozoic rocks of the Michigan basin; glass; Silurian rocks in the Michigan basin-–a little bit of everything; limestone and cement	geo.msu.edu/extra/geogmich/sandstones.html geo.msu.edu/extra/geogmich/paleozoic-limestone.html geo.msu.edu/extra/geogmich/limestone-mining.html geo.msu.edu/extra/geogmich/portland_cement.html geo.msu.edu/extra/geogmich/maxton_plains.html
Feb 7	More Silurian wealth: hydrocarbons **QUIZ 2**	everything under the heading "hydrocarbons (oil and gas)" on this page: geo.msu.edu/extra/geogmich/part-five-G.html **BOOK chapter 10**
Feb 9	Salt and brines; Devonian and Mississippian rocks in the Michigan basin; the story of Dow chemical; shale, clay and bricks	geo.msu.edu/extra/geogmich/evaporite.html geo.msu.edu/extra/geogmich/dow.html everything under "salt" on this page: geo.msu.edu/extra/geogmich/part-five-G.html geo.msu.edu/extra/geogmich/shale_and_clay.html

Feb 14	Coal; gypsum Major aquifers of the Michigan basin; the period of erosion and weathering; karst landscapes, sinkholes and caves	geo.msu.edu/extra/geogmich/coal.html geo.msu.edu/extra/geogmich/gypsummining.html geo.msu.edu/extra/geogmich/strat_column.html geo.msu.edu/extra/geogmich/NE-MIkarst.html geo.msu.edu/extra/geogmich/groundwater.html **BOOK chapter 16**
Feb 16	Catch up	
Feb 21	**EXAM 1**	
Feb 23	**PART II: The last 2 million years** Glaciation: onset of the ice, major ice lobes; deglaciation	The first five web pages listed on this page: geo.msu.edu/extra/geogmich/part-two-B.html **BOOK chapter 17**
Feb 28	EXAMS back. Continued retreat of the ice; end moraines, outwash plains and lake plains	The three-part deglaciation sequence listed here: geo.msu.edu/extra/geogmich/part-two-B.html geo.msu.edu/extra/geogmich/moraines.html geo.msu.edu/extra/geogmich/drumlins.html
Mar 2	Glacial sediments, proglacial lakes, and glacial landform regions	The pages associated with glacial lakes, on this page: geo.msu.edu/extra/geogmich/part-two-B.html The glacial landforms listed on this page: geo.msu.edu/extra/geogmich/part-two-C.html Many of the pages found here also are associated with glaciation: geo.msu.edu/extra/geogmich/part-three.html geo.msu.edu/extra/geogmich/mackinacchannel.html geo.msu.edu/extra/geogmich/Autrain-whitefish.html geo.msu.edu/extra/geogmich/St.Clair-delta.html **BOOK chapter 13**
Mar 6-10	Spring break!	
Mar 14	The Great Lakes in postglacial time; Michigan's dunes and sand mining	Many pages here have Great Lakes topics included within them: geo.msu.edu/extra/geogmich/part-two-E.html Dunes are found on several pages here: geo.msu.edu/extra/geogmich/part-two-C.html **BOOK chapter 18**
Mar 16	The Great Lakes: diversions of water into and out of them; Coastal issues: how coasts function; coastal development and contemporary erosion problems	Many pages here have Great Lakes topics included within them: geo.msu.edu/extra/geogmich/part-two-E.html **BOOK chapter 14**
Mar 21	**Part III: The last 500 years** Native American Indians, French "invaders" and the British	All the pages within this one: geo.msu.edu/extra/geogmich/part-four-A.html Several pages within this one: geo.msu.edu/extra/geogmich/part-four-B.html **BOOK chapters 26 and 27**
Mar 23	Early Michigan, statehood and the Toledo War; Michigan's external boundaries and internal land divisions	Several pages within this one: geo.msu.edu/extra/geogmich/part-four-B.html **Parts of BOOK chapter** 1
Mar 28	The USPLS system of land subdivision; Michigan fever	It should be obvious which pages on this page: geo.msu.edu/extra/geogmich/part-four-B.html are pertinent **BOOK chapter 28**
Mar 30	**EXAM 2**	
Apr 4	Lumbering: the start, its heyday and the end game; Lumbering video	Lumbering era materials are all located here: geo.msu.edu/extra/geogmich/part-four-C.html **BOOK chapter 40**

Apr 6	EXAMS back. Post-lumbering issues; stumped wastelands; post-logging fires, the CCC	geo.msu.edu/extra/geogmich/ccc.html geo.msu.edu/extra/geogmich/nationalforests.html and most of these pages: geo.msu.edu/extra/geogmich/part-five-D.html some of the latter pages on this page are useful: geo.msu.edu/extra/geogmich/part-four-C.html
Apr 11	Michigan's population trends, migration; urban sprawl and the rural-urban transition	geo.msu.edu/extra/geogmich/cities.html geo.msu.edu/extra/geogmich/city_character.html geo.msu.edu/extra/geogmich/land%20conversion.html some of these pages are pertinent: geo.msu.edu/extra/geogmich/part-four-F.html Some pages here: geo.msu.edu/extra/geogmich/part-four-E.html geo.msu.edu/extra/geogmich/cities_of_the_future.html Some of these pages are more pertinent than others: geo.msu.edu/extra/geogmich/part-four-E.html **BOOK chapters 32 and 34**
Apr 13	**Part IV: How we use Michigan's physical environment** Soils of Michigan; peat and muck, sod, soil quality	Look here: geo.msu.edu/extra/geogmich/part-two-D.html **BOOK chapter 20**
Apr 18	Major vegetation patterns in Michigan; post-lumbering changes and modern challenges; early agriculture	All of the pages here: geo.msu.edu/extra/geogmich/part-two-F.html **BOOK chapter 21**
Apr 20	Agriculture: early and later crop rotations; dairying and corn belt agriculture	geo.msu.edu/extra/geogmich/agriculture_in_mi.html geo.msu.edu/extra/geogmich/settle.html Don't ignore the many fine pages here: geo.msu.edu/extra/geogmich/part-five-C.html **BOOK chapter 36**
Apr 25	Agriculture: specialty crops: dry beans, sugar beets, potatoes, mint	Don't ignore the many fine pages here: geo.msu.edu/extra/geogmich/part-five-C.html **BOOK chapter 37**
Apr 27	Michigan climate and weather: factors and controls; Michigan's fruit belt and the "lake effect"	Lake effect and climate pages are here: geo.msu.edu/extra/geogmich/part-two-H.html Fruit pages are here: geo.msu.edu/extra/geogmich/part-five-C.html **BOOK chapters 19 and 38**

FINAL EXAM: Thursday, May 4 2016 3:00pm - 5:00pm in 206 Old Hort Bldg